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Environmental Compliance

NOAA UAS Conference

October 26, 2016

Presenter: Jonelle Dilley, Attorney-Advisor

NOAA Office of General Counsel – Oceans and Coasts Section



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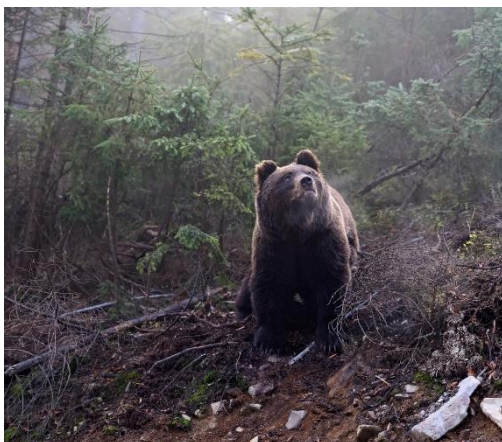
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<http://news.nationalgeographic.com/2015/08/150825-drones-animals-wildlife-bears-science-technology.html>

How Drones Are Affecting Wildlife in Surprising Ways

A recent study showing that black bear heart rates soar at the sight of a drone has some experts concerned.



SECTIONS ▼

TECH NOV 1 2015, 4:22 AM ET

Animals vs. Drones: Should Close Encounters Be Banned?

by KEITH WAGSTAFF



Drone Harasses Bighorn Sheep at Zion National Park

News Release Date: May 5, 2014

Contact: Aly Baltrus, 423-772-0164

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Springdale, Utah: Volunteers at Zion National Park recently witnessed a remote controlled drone flying close to a herd of bighorn sheep on the eastern side of the park. They observed the herd scattering at the approach of the drone with several young sheep separated from the adults by the drone. Harassment of wildlife within the park is illegal, as is the use of drones.



Tourist reportedly crashes drone into Yellowstone National Park's largest hot spring

By Kate Grise and Dave Alsop, CNN
Updated 11:37 AM ET, Thu August 7, 2014





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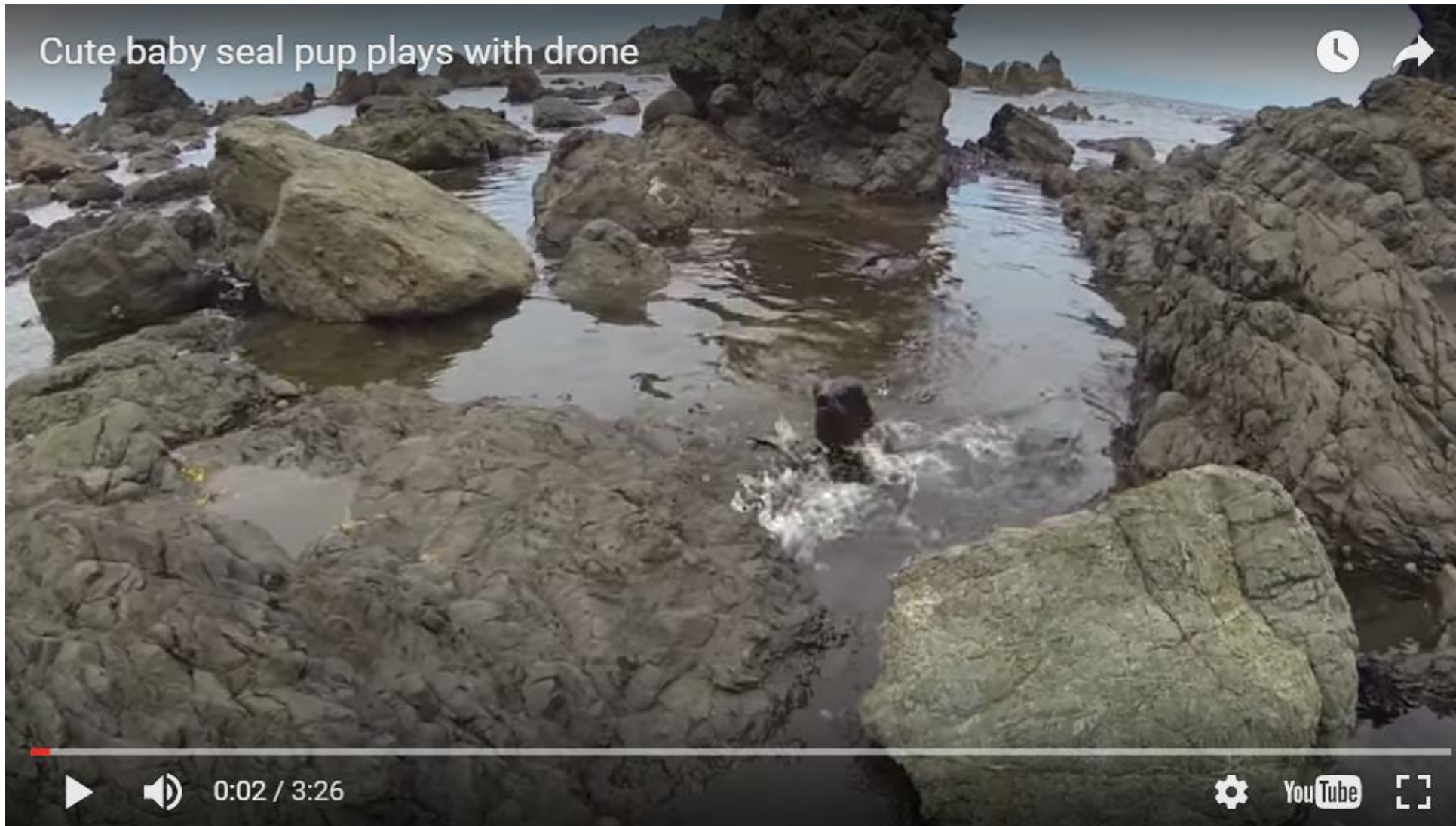
Alligators Don't Like Drones!



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11/1/2016

Contains Privileged Attorney Client Communication



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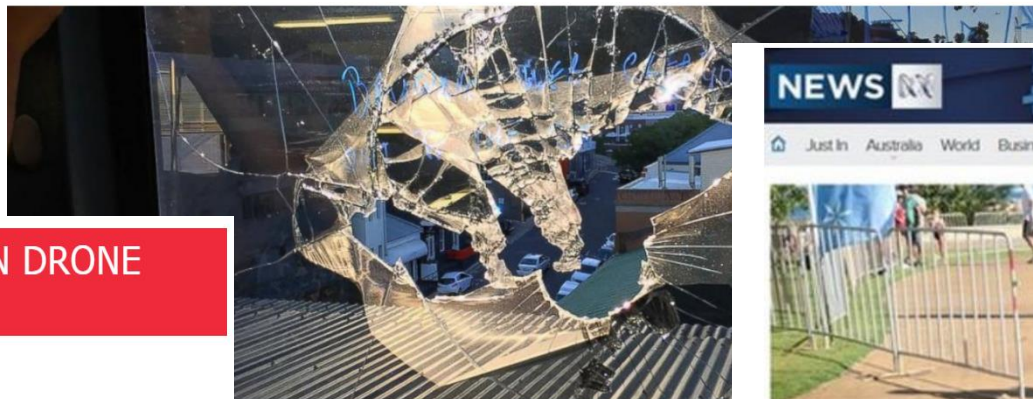
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Drone Crashes Through Window, Hits Man's Head

By STEVIE BORRELLO • Apr 8, 2016, 9:30 PM ET

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ENRIQUE IGLESIAS CUTS HAND ON DRONE DURING CONCERT

Published On June 1, 2015 | By Morgan Ryan | *Entertainment News*

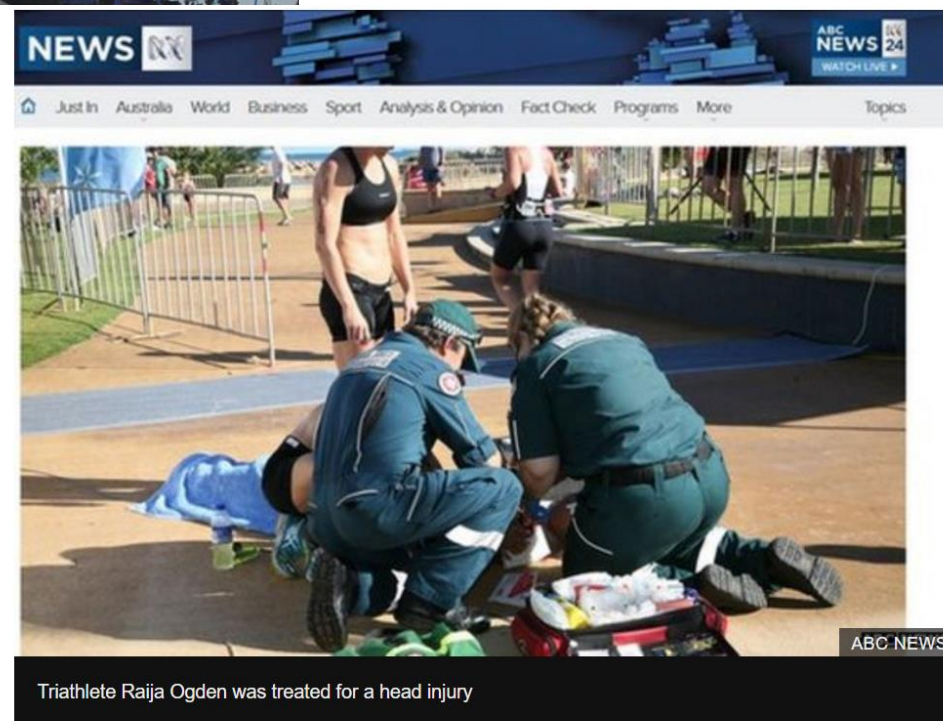
ENRIQUE IGLESIAS suffered a freak injury at a show in Tijuana over the weekend . . . when he had a run-in with a DRONE.



Enrique had a camera drone flying around getting crowd shots, and he's been known to grab it, and angle it down from the stage to provide a 'point of view' shot. But something went wrong and it SLICED OPEN HIS FINGERS.

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Australia's air safety body is looking into reports that a triathlete has been injured by a falling drone.



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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Assistant Secretary for Conservation and
Management
1401 Constitution Ave, NW
Washington, DC 20230

Michael P. Huerta
Administrator, Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591

Administrator Huerta,

The National Oceanic and Atmospheric Administration (NOAA) appreciates the opportunity to provide comments on the Federal Aviation Administration's (FAA) Notice of a Proposed Rulemaking on the Operation and Certification of Small Unmanned Aircraft Systems (UAS). NOAA supports the FAA's efforts to clarify its authority related to the commercial use of UAS and appreciates the need to manage both commercial and recreational UAS use to ensure public safety and minimize risks of collision with manned aircraft. We also appreciate the difficulties of regulating human activities where the effects to the surrounding environment are not entirely certain.

NOAA reviewed the FAA's Proposed Rule with this in mind and with a view towards both UAS to support NOAA's science, service and stewardship missions, and the use of UAS in proximity to our trust resources – marine wildlife protected under the Marine Mammal Protection Act of 1972 (MMPA), the Endangered Species Act of 1973 (ESA), and the National Marine Sanctuaries Act (NMSA). In particular, the attached comments reflect NOAA's interest in providing the FAA with information about the potential impacts of UAS on protected resources (e.g., marine wildlife, National Marine Sanctuaries) and current policies or regulations developed by NOAA's National Marine Fisheries Service (NMFS) and National Ocean Service (NOS) under these authorities.

I encourage the FAA to work with NOAA and other wildlife conservation agencies in the finalization of the Proposed Rule, including offering our technical assistance to the FAA in the incorporation of these and similar comments it may receive, so that key elements for minimizing disturbance of protected wildlife by commercial UAS are included. I also invite the FAA to work with NOAA in the development of guidelines and regulations for recreational use of UAS in proximity to NOAA trust species.

Again, thank you for the opportunity to comment on the Proposed Rule. If you have further questions, please contact CAPT Philip Hall, Unmanned Aircraft Systems Program Manager, NOAA Office of Marine and Aviation Operations (301-713-7611, philip.g.ball@noaa.gov).

Sincerely,

Holly A. Bamford, Ph.D.
Acting Assistant Secretary for Conservation and Management
National Oceanic and Atmospheric Administration



NOAA considers UAS as an important research tool for supporting the full range of NOAA's mission goals for weather, climate, coastal resiliency, and ocean health. For example, NOAA is pursuing UAS observations for improved understanding and prediction of storms at sea and seasonal sea ice changes in the Arctic. Additionally, NOAA's wildlife conservation and recovery efforts under our Federal mandates require conservation and regulatory programs to be based on the best available science. Thus, high quality UAS imagery of NOAA trust species, such as whales and sea lions, could be very beneficial, while offering significant cost savings and safety to NOAA personnel.

However, we are concerned about the impact small UAS could have on national marine sanctuary resources such as whales and birds. While UAS have the potential for beneficial uses, they may also represent an added stressor on sensitive marine ecosystems and wildlife populations by disturbing wildlife. We have received numerous complaints about the public flying UAS too close to marine mammals and, although NOAA has existing policies, guidelines, and regulations to address viewing of protected marine species, we are only now developing guidance to specifically address UAS use near protected species to avoid the potential for harassment.



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Environmental Compliance and UAS – Relevant Statutes and Regulations

- National Environmental Procedures Act (NEPA)
- Endangered Species Act (ESA)
- Marine Mammal Protection Act (MMPA)



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National Environmental Procedures Act, (NEPA)

- Purposes:
 - Disclose, analyze, and consider environmental information as a criteria when making decisions.
 - Inform the public of potential impacts and alternatives and involve the public in decision making.
- Trigger:
 - "Major Federal actions significantly affecting the quality of the human environment" Sec. 102(C), 42 U.S.C. § 4332(C)
 - Affects/Impacts – both beneficial and negative



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Hierarchy Of NEPA Analyses and Documentation Processes:

- Categorical Exclusion (CE / CATEX)
- Environmental Assessment (EA)
- Environmental Impact Statement (EIS)



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Categorical Exclusion (CE / CATEX)

40 CFR 1508.4

- Categories of actions shown to not have significant effects
- Administratively promulgated
- Subject to Extraordinary Circumstances - when a normally excluded action may have significant environmental effect
- Documentation Likely Required



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NOAA Categorical Exclusions

NAO 216-6, May 20, 1999

- 6.03c.3(a) Research Programs. Programs or projects of limited size and magnitude or with only short-term effects on the environment and for which any cumulative effects are negligible.
- Examples include:
 - Natural resource inventories and environmental monitoring programs conducted with a variety of gear (satellite and ground-based sensors, fish nets, etc.) in water, air, or land environs. Such projects may be conducted in a wide geographic area without need for an environmental document provided related environmental consequences are limited or short-term.



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NOAA Categorical Exclusions

NAO 216-6, May 20, 1999

- 6.03c.3(d) Administrative or Routine Program Functions.
- The following NOAA programmatic functions qualify (*excerpts*):
 - mapping, charting, and surveying services;
 - ship and aircraft operations;
 - enforcement operations;
 - basic environmental services and monitoring, such as weather observations, communications, analyses, and predictions;
 - environmental data and information services;
 - air quality observations and analysis;
 - support of national and international atmospheric and Great Lakes research programs



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NOAA Categorical Exclusions

NAO 216-6, May 20, 1999

Extraordinary circumstances (if activity involves)(*excerpts*):

- a geographic area with unique characteristics,
- are subject of public controversy based on potential environmental consequences,
- have uncertain environmental impacts or unique or unknown risks,
- may result in cumulatively significant impacts, or
- may have any adverse effects upon endangered or threatened species or their habitats.



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(Deliberative/Predecisional)

NOAA Draft Categorical Exclusions

- E4: Activities that measure, survey or observe living resources in the field with little to no potential to affect the environment or interfere with organisms or habitat. These studies do not include the alteration of biological or physical environments.
- Examples:
 - Visual observation of marine mammals and sea turtles from stationary or mobile platforms using best management practices
 - Deploy and use electronic monitoring devices including cameras, environmental data loggers, buoys, passive acoustics, and other non-invasive data recording instruments to study population structure, behavior, and movements.
 - Behavioral observations of animals (e.g., snorkel, or on-foot observers trained to collect data with minimum impact).
 - Scuba diver visual observation surveys, photographic and video surveys, use of quadrats, meter tapes and other hand-held equipment or devices to measure water quality parameters (i.e. hand-held PAMS) or to quantify fish, benthic, mobile and sessile communities where there is no adverse impact to benthic communities and best management practices are observed.



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NOAA Draft Categorical Exclusions

- E3: Activities to collect aquatic, terrestrial, and atmospheric data in a non-destructive manner.
- Example:
 - Deployment, operation, and retrieval of a limited number of ROVs, ASVs, AUVs, buoys, moorings, or similar instrumentation to conduct non-destructive sampling and collection of data from those instruments once installed, including physical, chemical, and biological measurements, and visual data.



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NOAA Draft Categorical Exclusions

Extraordinary Circumstances (*excerpts*):

- a potentially significant effect on human health or safety;
- a potentially significant effect on an area with unique environmental characteristics (e.g., wetlands and floodplains, national marine sanctuaries, or national marine monuments);
- a potentially significant effect on species or habitats protected by the ESA, the MMPA, the MSA, or the Migratory Bird Treaty Act;
- a potentially significant effect on properties listed or eligible for listing on the National Register of Historic Places under the National Historic Preservation Act of 1966, National Historic Landmarks, or the National Monuments designated through the Antiquities Act of 1906; Federally recognized Tribal and Native Alaskan lands, cultural or natural resources, or religious or cultural sites;
- highly controversial environmental effects; or
- uncertain and potentially significant environmental effects or unique or unknown risks



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Environmental Assessment

40 CFR § 1508.9

- Concise document
- Provides evidence and analysis for determining whether to prepare an EIS
- Aids in complying with NEPA when an EIS is not required.
- Facilitates preparation of EIS if one is necessary.
- If no significant impacts are found, results in a Finding of No Significant Impacts (FONSI)



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Environmental Assessment

40 CFR § 1508.9

- Brief discussion of the purpose and need for the proposal
- Reasonable alternatives to recommended courses of action for any proposal involving conflicts concerning use of natural resources
- Anticipated environmental impacts of the proposed action and alternatives



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Example Environmental Assessment NASA, Wallops Island, VA

- NASA: Environmental Assessment for North Wallops Island
Unmanned Aerial Systems Airstrip (June 2012)
https://sites.wff.nasa.gov/code250/docs/UAS_FEA/UAS_FEA_doc.pdf



Figure 2. NASA Controlled/Restricted Airspace R-6604A/B and Location of the Existing and Proposed UAS Airstrips



Figure 3. UAS Currently Operating and Proposed for Future Operations at WFF

Example Environmental Assessment – Wallops Island

Table 1. UAS Operating and Proposed for Operations at WFF							
<i>Model/Class of Vehicle</i>	<i>Wingspan (m/ft)</i>	<i>Length (m/ft)</i>	<i>Maximum Weight with Payload (kg/lbs)</i>	<i>Minimum Airstrip Requirement (m/ft)</i>	<i>Power</i>	<i>Maximum Airspeed (kph/knots)</i>	<i>Endurance (hours)</i>
Aerosonde ¹	3.0/9.5	1.5/5.6	14/30	none	1.2 kilowatt-electric	111/60	30
GTM AirSTAR ²	2.0/7.0	2.5/8.0	23/50	450/1,500	Turbofan engine	121/65	10-12 minutes
Viking 100 ³	4.5/15.0	2.5/8.0	68/150	450/1,500	16 horsepower	102/55	10-14
Viking 300 ³	5.5/17.5	4.0/13.5	144/318	450/1,500	25 horsepower	104/56	8-10
Viking 400 ³	6.0/20.0	4.5/14.7	240/530	760/2,500	38 horsepower	111/60	8-12
Exdrone ⁴	3.0/9.5	2.0/6.2	2/6	100/300	8 horsepower	144/78	2
Scan Eagle ⁵	3.0/9.5	2.0/5.6	2/6	10/30	1.2 kilowatt-electric	204/110	40
Shadow 200 ⁶	6.0/20.0	4.0/12.0	4/12	30/500	38 horsepower	130/70	4
Blimp (tethered)	2.0/7.0	7.0/23.0	7/23	none	n/a	n/a	n/a

Notes: ¹ Manufactured by Aerosonde. ² GTM (Generic Transport Model) AirSTAR is manufactured by NASA Langley Research Center. The GTM is similar to an upscale model airplane and is the smallest of the UAS piloted at WFF. ³ Manufactured by L3 BAI Systems. ⁴ Launched via catapult; stopped by chute or skid. ⁵ Launched via catapult; stopped via SkyHook. ⁶ Launched via catapult; wheel landing. kg=kilogram, lbs=pounds, kph=kilometers per hour.



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Example Environmental Assessment – Wallops Island

Factors Assessed for UAS Operations:

- Airspace management
- Safety
- Noise
- Biological Resources
- Air Quality
- Socioeconomic
- Cumulative Effects

• Biological Resources – Birds

- No UAS studies found
- Extrapolated impacts from studies of startle responses/flushing from low altitude flights

Wallops Island EA - Mitigation

Table 17. Summary of Mitigation Measures to be Taken	
	Mitigation Measure
Loggerhead Sea Turtle – federally listed threatened	UAS would operate infrequently at night; safety lighting at the airstrip would be of minimal intensity and downward-shielded; and overflying UAS would not use running lights.
Red Knot – federally listed threatened	UAS would overfly the beach eight times per day, at most; UAS operators would be instructed to maintain a flight path both 300 m (1,000 ft) vertically and horizontally away from red knots; and sound levels generated by the loudest UAS would be below ambient sound levels.
Piping Plover – federally listed threatened	UAS would overfly the beach eight times per day, at most; UAS operators would be instructed to maintain a flight path both 300 m (1,000 ft) vertically and horizontally away from piping plover nests; and sound levels generated by the loudest UAS would be below ambient sound levels.
Florida thoroughwort and Maritime Dune Woodland – globally rare	NASA would implement of the Invasive Species Management Plan and the Rare Species and Community Action Plan for Northern Wallops Island (Appendix G).
Bald Eagle – delisted, protected under the Bald and Golden Eagle Protection Act	A 200 m (660 ft) protective buffer surrounds the bald eagle nest site; this buffer would be maintained. NASA would coordinate monitoring and results with USFWS. If monitoring indicates a potential risk to eagles or aircraft, NASA would work with USFWS and VDGIF to mitigate the risk and/or obtain appropriate permits.



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Example Environmental Assessment - FWS Prairie Dog Vaccination

Fish & Wildlife Service Use of Unmanned Aerial Systems to Deliver
Prairie Dog Sylvatic Plague Vaccination UL Bend National Wildlife
Refuge Charles M. Russell National Wildlife Refuge (March 31, 2016)
https://www.fws.gov/uploadedFiles/UAS_2016_EA_final.pdf





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Example Environmental Assessment - FWS

ALTERNATIVES INCLUDING THE PROPOSED ACTION

- Alternative A – Deliver Sylvatic Plague Vaccine to prairie dog colonies using Unmanned Aircraft Systems – PROPOSED
 - Up to 10,000 acres of prairie dog colonies on CMR would be treated with SPV at least annually starting in 2016 using UAS. The UAS will be pre-programmed to fly transects 3-30 meters above ground level and drop baits in a pattern that results in uniform distribution at a rate of 50 baits per acre. Flight times will be limited from dawn until noon to maximize the opportunity for prairie dogs to find and consume baits. Treatments will generally be during July or August each year.
- Alternative B – Deliver Sylvatic Plague Vaccine to prairie dog colonies on foot or from All-Terrain Vehicles (ATV)
- Alternative C – No Action



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Environmental Impact Statement (EIS)

40 CFR 1502.3

- Comprehensive action-forcing device for actions with significant environmental effects
- Includes:
 - impacts (direct, indirect and cumulative),
 - actions (connected, cumulative and similar)
 - reasonable alternatives (no-action)
 - Procedural steps focus on issue identification and analysis.



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Environmental Impact Statement - Public Process

- Notice of Intent—40 CFR 1508.22
- Scoping—40 CFR 1501.7
- Draft Environmental Impact Statement—40 CFR 1502.9
- Final Environmental Impact Statement
- Record of Decision
- Supplemental Environmental Impact Statement



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Marine Mammal Protection Act, 16 USC 1361, et seq

- Prohibits takes of marine mammals
- Take includes harassment
 - Level A: potential to injure a marine mammal or marine mammal stock
 - Level B: potential to disturb by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering
- May seek authorization for taking of a small number of marine mammals incidental to a specified activity
 - Must find negligible impact
 - Final Rule/Letter of Authorization- 5 years
 - Incidental Harassment Authorization – 1 year (harassment only)
- Program/Line office may make determination that incidental take is not likely to occur



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Endangered Species Act, 16 USC 1531

- ESA prohibits take, which is defined as harming (includes killing) or harassing a listed species.
- Section 7(a)(2) -consultation to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.
 - “May affect” – informal consultation, concurrence required
 - “Likely to affect” – formal consultation.
 - Biological Assessment (proponent), Biological Opinion
 - Incidental Take Statement (may include reasonable and prudent measures)



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NOAA Viewing Guidelines and Approach Regulations

- Unmanned Aircraft Systems: Responsible Use to Help Protect Marine Mammals <http://www.nmfs.noaa.gov/pr/uas.html>
 - Federal guidelines recommend keeping a safe aerial distance of at least 1000 feet (300 yards) from marine mammals in the wild.
 - ESA regulations restrict close approaches by air for humpback whales in Hawaii (1000 feet = 300 yards) and for North Atlantic right whales (1500 feet = 500 yards). Interim Final Rule for HHW issued in Sept 2016 applies approach regulation to UAS.
- UAS Research FAQ's <http://www.nmfs.noaa.gov/pr/permits/uas.html>
 - “Will I need a permit under the Marine Mammal Protection Act (MMPA) and/or the Endangered Species Act?”
 - Yes, if your research activities will be directed at marine mammals or sea turtles at an altitude below 1000 feet.”



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Other Statutes:

- Migratory Bird Treaty Act, 16 U.S.C. 703
- Bald and Golden Eagle Protection Act, 16 U.S.C. 668
- National Historic Preservation Act, 16 U.S.C 470
- Executive Order 13175 Tribal Consultation



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National Marine Sanctuaries Act, 16 USC 1431

- Unlawful to destroy, cause the loss of, or injure any sanctuary resource
- Sanctuary resource – any living or nonliving resource that contributes to the conservation, recreational, ecological, historical, educational, cultural, archeological, scientific, or aesthetic value to the sanctuary, including seabirds, sea turtles, marine mammals, and historic resources



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National Marine Sanctuaries Act, 16 USC 1431

- Individual Sanctuary Regulations
 - Prohibited Activities
 - Typically prohibited to “take” any marine mammal, sea turtle, or bird within or above the Sanctuary, except as authorized by MMPA, ESA, or MBTA
 - Some sanctuaries: prohibited to disturb marine mammals or seabirds by flying motorized aircraft at less than 1,000 feet in certain zones. <http://sanctuaries.noaa.gov/flight/>
 - Permits for prohibited activities issued for research, education, and sanctuary management
 - Consult with individual sanctuary Permit Coordinators prior to using UAS in an individual sanctuary
<http://sanctuaries.noaa.gov/management/permits/welcome.html>



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Considerations for Use in Other Areas

- FAA Advisory Circular 91-36d (*voluntary 2,000 ft restriction for noise sensitive areas*)
- National Parks (*permit or MOU required*)
- National Wildlife Refuges (*permit may be required*)
- National Forests (*regulated same as aircraft*)
- California Marine Reserves and Refuges (*permit may be required*)
- Other state, local laws and ordinances



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Help?

National Marine Fisheries Service NEPA Coordinators

NMFS Headquarters

Steve Leathery

NEPA Staff: Cristi Reid, Susan Staehle,
Christopher Holmes, Patience
Whitten

Alaska Region

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Noah Silverman

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National Ocean Service NEPA Coordinators

NOS Headquarters

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Center for Operational Oceanographic
Products and Services

Rachel Krasna

National Centers for Coastal Ocean Science

Paula Whitfield

Office of Coast Survey

Jay Nunenkamp

Office for Coastal Management

Patmarie Nedelka

Office of National Geodetic Survey

Steve Kokkinakis

Office of National Marine Sanctuaries

Jen Lechuga

Office of Response and Restoration

Kate Clark

Integrated Ocean Observing System

Regina Evans



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NOAA NEPA Coordinators

Office of the Chief Administrative Officer

Dave Winandy

National Weather Service

Scott Burgoon

Office of Oceanic and Atmospheric Research

Tammy Adams

National Environmental Satellite, Data, and Information
Service

John Gironda

Office of Marine and Aviation Operations

Kevin Ivey



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Backup



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National Park Service

- National Park Service: June 19, 2014, Order to close units of the National Park System to unmanned aircraft. PM 14-05, available at https://www.nps.gov/policy/PolMemos/PM_14-05.htm
- “a necessary, interim measure while this new use can be properly evaluated.”
- Does not apply to:
 - Administrative use of unmanned aircraft for scientific study, search and rescue operations, fire operations, and law enforcement. Administrative use includes the use of unmanned aircraft by .. (ii) cooperators such as government agencies and universities that conduct unmanned aircraft operations for the NPS pursuant to a written agreement;
 - Activities conducted under a Scientific Research and Collecting Permit that specifically authorizes launching, landing, or operating an unmanned aircraft and is approved in consultation with the Associate Director for Natural Resource Stewardship and Science.
 - Activities conducted under a special use permit that specifically authorizes launching, landing, or operating an unmanned aircraft and is approved in writing



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Fish and Wildlife Services – National Wildlife Refuges

- 50 C.F.R. § 27.34, “[t]he unauthorized operation of aircraft, including sail planes, and hang gliders, at altitudes resulting in harassment of wildlife, or the unauthorized landing or take-off on a national wildlife refuge, except in an emergency, is prohibited.”
- One refuge web pages say that this applies to drones
- Contact individual refuge whether special use permit is required
<https://www.fws.gov/refuges/refugeLocatorMaps/index.html>



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U.S. Forest Service

- <http://www.fs.fed.us/science-technology/fire/unmanned-aircraft-systems>
- “Unmanned Aircraft System (UAS) must be considered the same as manned aircraft, in terms of acquisition, approval and carding of pilots and aircraft, inspections, maintenance, avionics, training, and operations. All FSM 5713.7 and FSH 5709.16 references to manned aircraft include UAS.”
- No particular environmental policy



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FAA Advisory Circular 91-36d (Sept. 17, 2004)

http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC91-36d.pdf

- Voluntary altitude restrictions of 2,000 feet over noise sensitive areas such as National Parks, National Wildlife Refuges, Waterfowl Production Areas and Wilderness Areas. AC 91-36D at ¶ 8.b, 6.b.



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States

- California
 - Under California Fish and Game Code, 10501.5 (a) It is unlawful to fly any aircraft, including any airplane or helicopter. . .less than 1,000 feet above water or land over Año Nuevo State Reserve, the Farallon Islands Game Refuge, the Point Lobos State Reserve, the California Sea Otter Game Refuge, and Anacapa, San Miguel, Santa Barbara and San Nicolas Islands
 - CA's Department of Fish and Wildlife's website declares that these regulations apply to UASs. <https://californiaoutdoorsqas.com/tag/drones/>
 - Need to apply for research permit
- Other
 - One website reports that 32 states enacted legislation on UAS, and 38 considered new legislation in 2016. 10 states have laws on UAS use related to hunting and fishing.